

What is claimed is:

1. An optical waveguide fiber comprising a central core region surrounded by an outer cladding region, the central core region having an alpha less than 4, the fiber having a dispersion at a wavelength of about 1550 nm of between about 4 ps/nm/km and about 8 ps/nm/km, and a dispersion slope of less than 0.025 ps/nm<sup>2</sup>/km at every wavelength between about 1525 nm and 1650 nm.
2. The optical waveguide fiber of Claim 1 wherein the dispersion slope is less than 0.02 ps/nm<sup>2</sup>/km at every wavelength between about 1525 nm and 1650 nm.
3. The optical waveguide fiber of Claim 1 wherein the dispersion slope is less than 0.025 ps/nm<sup>2</sup>/km at every wavelength between about 1525 nm and 1700 nm.
4. The optical waveguide fiber of Claim 1 wherein the absolute magnitude of the dispersion is less than 10 ps/nm/km at every wavelength between about 1310 nm and 1700 nm.
5. The optical waveguide fiber of Claim 1 further comprising a first annular core region surrounding and immediately adjacent the central core region, the first annular core region having a minimum relative refractive index percent,  $\Delta_{2,MIN}$  between about -0.3% and -0.4%.
6. The optical waveguide fiber of Claim 1 wherein the fiber has zero dispersion wavelength less than about 1400 nm.
7. The optical waveguide fiber of Claim 1 wherein the fiber has a cabled cutoff wavelength of less than about 1260 nm.
8. The optical waveguide fiber of Claim 1 wherein the fiber has an effective area of greater than about 40  $\mu\text{m}^2$  at a wavelength of about 1550 nm.

9. The optical waveguide fiber of Claim 1 wherein the fiber has a pin array bending loss less than about 8 dB at a wavelength of about 1550 nm.

10. The optical waveguide fiber of Claim 1 wherein the fiber has a pin array bending loss less than about 5 dB at a wavelength of about 1550 nm.

11. The optical waveguide fiber of Claim 1 wherein the fiber has a pin array bending loss less than about 15 dB at a wavelength of about 1600 nm.

12. The optical waveguide fiber of Claim 1 wherein the optical fiber further comprises:

a first annular core region immediately adjacent and surrounding the central region and having a negative relative refractive index percent,  $\Delta_2 \%(r)$ , with a minimum relative refractive index percent,  $\Delta_{2,MIN}$ ;

a second annular core region immediately adjacent and surrounding the first annular core region and having a positive relative refractive index percent,  $\Delta_3 \%(r)$  with a maximum relative refractive index percent,  $\Delta_{3,MAX}$ ; and

a third annular core region immediately adjacent and surrounding the second annular core region and disposed between the second annular core region and the outer annular cladding region, the third annular core region having a negative relative refractive index percent,  $\Delta_4 \%(r)$  with a minimum relative refractive index percent,  $\Delta_{4,MIN}$ .negative relative refractive index percent,  $\Delta_4 \%(r)$  with a minimum relative refractive index percent,  $\Delta_{4,MIN}$ ;

wherein the central core region extends radially outward from the centerline and has a positive relative refractive index percent,  $\Delta_1 \%(r)$  with a maximum relative refractive index percent,  $\Delta_{1,MAX}$ ; and

wherein the outer annular cladding region surrounds and is immediately adjacent the third annular core region and has a relative refractive index percent,  $\Delta_c \%(r)$ .

13. The optical waveguide fiber of Claim 12 wherein the central core region has an alpha less than 3.5.

14. The optical waveguide fiber of Claim 12 wherein  $\Delta_{1,MAX}$  is between about 0.5% and 0.7%.
15. The optical waveguide fiber of Claim 12 wherein the central region has a radius of between about 3  $\mu\text{m}$  and about 5  $\mu\text{m}$ .
16. The optical waveguide fiber of Claim 12 wherein  $\Delta_{2,MIN}$  is between about -0.2% and -0.5%.
17. The optical waveguide fiber of Claim 12 wherein the first annular core region has a width of between about 1  $\mu\text{m}$  and 5  $\mu\text{m}$  and a midpoint between about 3  $\mu\text{m}$  and 7  $\mu\text{m}$ , wherein the second annular core region has a width of between about 3  $\mu\text{m}$  and 7  $\mu\text{m}$  and a midpoint between about 7  $\mu\text{m}$  and 11  $\mu\text{m}$ , and wherein the third annular core region has a width of between about 2  $\mu\text{m}$  and 6  $\mu\text{m}$  and a midpoint between about 11  $\mu\text{m}$  and 15  $\mu\text{m}$ .
18. The optical waveguide fiber of Claim 12 wherein  $\Delta_{3,MAX}$  is between about 0.1% and 0.3%.
19. The optical waveguide fiber of Claim 12 wherein  $\Delta_{4,MIN}$  is between about -0.03% and -0.2%.
20. An optical transmission system comprising the optical waveguide fiber of Claim 1.